✓ included in model runs 3a + 4a

ORK-IN-PROGRESS
ROPOSED PACKAGE OF CLEAN AIR STRATEGIES

SINGLE TEXT - DRAFT #1
Level 1 most stakeholders voted for this

Option	Description	Source	VOC	NOx
3	Auto refinish- limit VOC content (SCAQMD) at point-of-sale	Area	3.8	
4 ✓	Surface Cleaning & degreasing	Area	5.9	--
5	Install pressure vacuum valves on vent line on underground storage tanks in gasoline service stations	Area	1.9	add non-NOx MOU sources + SCR
13	Utility Boilers - SCR → phase II → III 105 ppm or 0.2 lb/mmBTU → 75% or 0.15 lb/mmBTU	Stationary	--	18.3
14	Industrial Boilder - LNB	Stationary	--	13.0
22	reciprocating IC engines - N.G. transmission CENS	Stationary	--	9.0
25 ✓	RACT to small commercial combustors	~~Stationary~~ Area	--	12.6
36	Remote Sensing	Mobile	1.2	0.6
42 ✓	Clean Diesel for SEPTA CNG for Frontier Division	Mobile Mobile	.47 .01	2.19 .23
70	Park & Ride	Mobile	0.03	0.04
76 ✓	NLEV	Mobile	11.5	13.5
96	LPG PILOT	Mobile	2.4	1.4
109	Aircraft/ground vehicles	Mobile Stationary	3.7	2.4
120	Trading Program	All	?	?
128	Expand RFG to Selected Areas	Mobile	14.8	4.0
TOTAL			45.71	77.26

* 13 stakeholders voted for these
** 12 " " " "

Individual Comments Associated With Level-1 Options

- 4,13 (NOx MOU Phase II) and 25,42,70,76 - Requirements already anticipated
- need more information on #23 - substantial NOx reduction, high cost
- need to talk more about #128 - big reduction, big cost/ton
- #128 provides significant reduction in toxic air emissions, actual experience-lower cost than anticipated, higher toxic reduction than anticipated
- #13 - We need 1995, 1996 data to see full impacts, as per "NOx allocation methodologies" Draft - Aug. 6, 1996 DEP. - 3,441 tons from 1990 baseline
- #36 and #96 - Regulatory strategies that could apply as trading strategies
- #42 - Discretionary Strategies - could be either regulatory or voluntary
- Options 42 (including 42A and 42B), 81 and 98 are all related; however, SEPTA should not limit its study of - and conversion to - alternative-fuel vehicles to CNG and LBG propulsion. Biodiesel and Methanol (either pure methanol or as M85 mixture) should be considered, and options other than internal-combustion engines (e.g. Fuel Cells) should be tried. The three Empowerment Zones would be excellent locations for road testing demonstration models of various alternative-fuel vehicles.
- The State of Pennsylvania should be the initiator of options 96, 100 and 102. As with options 42, 81 and 98 discussed previously, we believe it is preferable to explore alternative fuels besides LBP and CNG. The state should also consider alternative fueling stations along routes other than the Pennsylvania Turnpike, as local production of alternative fuels in farm areas may prove viable, thus creating an alternative fuel industry as well as an infrastructure.
- #3 -Raise at OTC meeting for regional coordination
- #76 -Commitment to OTC LEV as back stop
- #128 -RFG could be applied to 4 counties surrounding Philadelphia 5-county area (128) or statewic (128a)
- #13 -Counties surrounding 5-county Philadelphia area
- #36 -Use only to augment another program; Never stand alone
- #13 and 14 -application of RACT to smaller sources between 10 to 24 ton emission using a presumptive RACT
- #3 -apply better VOC control limits to smaller sources for autobody refinishing. A new national rule must be applied. Also, the Air Pollution Control Act allows regulation stricter than the federal minimum in order to meet the NAAQS (Act 1992-95, Section 4.2 (b)(1));
- #70 -Parking expansion at railway stations-continued periodically & long-term
- #3 -nationwide standards should be set, & implemented in Pennsylvania
- #120 -the open market trading proposal should never be used
- modification of #14 as written to: enforce lower NOx limits during ozone season OR on certain days during ozone season
- #5-contingency - We should propose a main list PLUS a contingency list that could be used if the main list (once implemented) doesn't achieve attainment

ORK-IN-PROGRESS
ROPOSED PACKAGE OF CLEAN AIR STRATEGIES

SINGLE TEXT - DRAFT #1

1/2 of stakeholders voted for this

Level 2

Option	Description	Source	VOC	NOx
1	Surface Coating	Area/Point	12.3	--
23	LNB + FGR Process Heaters: Natural Gas or Oil	Stationary	--	6.8
38	Heavy-Duty Diesel I/M	Mobile	<0.1	?
46	Incident Management	Mobile	0.16	0.02
51	Rail Improvements	Mobile	0.04	0.06
61	Regional Rideshare		0.3	0.33
62	Transit Check	Mobile	0.12	--
63	Telecommute	Mobile	0.59	0.68
4	Compressed work week	Mobile	0.21	0.27
71-73	Bicycle Improvements	Mobile	.21 .33	.18 .34
85	Expand Stage II vehicle fueling requirement to beyond the five-county area	Mobile	3.3	--
99	Clean fleet replacement	Mobile	2.89	1.71
105	Lawn and Garden	Area	?	?
106	Lawn and Garden	Area	?	?
119	Cap and Trade	All	--	--
122-124	Community Education		?	?
TOTAL			20.55	10.39

Individual Comments Associated With Level 2 Options

- exclude 38
- 62, 63, 64 could apply under trading
- 123 could apply as trading strategy
- Options 62 and 84 are related; the Transitchek should be extended to employees of non-profits as well as for-profits and should be considered as an additional benefit (going with the grants proposed in option 84) for non-profits promoting public transit. This should be jointly carried out by SEPTA and major corporate stakeholders.
- Options 71 to 73 should be viewed as having both urban and suburban components. The suburban components should be run by SEPTA in concert with local government and the Bicycle Coalition of the Delaware Valley. In Philadelphia, SEPTA, the city government and the coalition should be working together; specifically in the Empowerment Zones, Sea Change is developing a full-rebate bicycle rental plan.
- The city of Philadelphia should take the lead in initiating clean fleet replacement (option 99). Not only do they maintain a large vehicle fleet, but their example (and the availability of alternative fueling stations) should encourage other area fleet operators to switch to zero/low-emission vehicles.
- Options 122-124 should be spearheaded by Sea Change with the assistance especially of Sun Company and PECO. Sea Change is currently a Green Lights endorser and has always promoted environmental education. We strongly urge public and private commitment to tree-planting; as an article in the September 17 Inquirer points out, trees and other green plants remove ozone from the atmosphere. As Sea Change has both a commercial tree farm and organic garden (and is teaching organic gardening to the community), we have been walking our talk. Additionally, we are forming a Shade Tree Commission for the Empowerment Zones and working with USDOE's Cool Communiti Program to promote tree-planting not only for ozone reduction, but to reduce urban heat production. We propose approaching residents for a $1/year contribution, to be collected by PECO along with utility bill payments. In return, emissions credits that are obtained from tree planting efforts can be transferred to PECO. If Sun Company and others embark on aggressive tree planting they will be able to derive their own emission credits.
- increasing forest cover in 5-county area to help bring down ambient air temperature; (a S.T. Rao unofficial suggestions from his presentation meeting earlier this summer)
- #1 -Check on potential difference in product quality
- 61,62,64,71,72,73 -Mobility Alternative Program
- #119 -should be used only as a long-term measure, after 2005
- #119 -An overlay of a cap and trade program is assumed in order to provide some measure of private sector decision making in the process
- #46 -Air Quality co-benefit with congestion management

'ORK-IN-PROGRESS
ROPOSED PACKAGE OF CLEAN AIR STRATEGIES

SINGLE TEXT - DRAFT #1

Level 3 9/14 of stakeholders voted for this

Option	Description	Source	VOC	NOx
7	Apply more stringent LDAR to refinery fugitive emissions	Area	1.0	
10	Graphic Arts-extend RACT	Stationary	1.5	
20	Gas Turbines	Stationary	--	6.2
33	Require sale of low VOC driveway sealer	Area		
34	Promote compact communities to facilitate public transit	Mobile		
41	Eliminate excess curb idling	Mobile		
43	Enable public reporting of vehicles with excess tailpipe smoke	Mobile		
47	Ramp Metering	Mobile	.41	.034
79	VMT TAX .04	Mobile	5.2	8.7
84	Transit Checks			
111	Calif. Phase II Stds for engines $\geq$ 175 HP	Mobile		.08
116	Ban lawn care on expected high ozone days	Area	?	?
TOTAL			8.11 +	15.014 +

Individual Comments Associated With Level 3 Options

- #79 -State tax rebate for transportation related improvements - Title V permits will require industry to pay for pollution - car users should also
- #120 -Allow market trade with 25% emissions tax and no trades for "no Control RACT determinations
- #79 -Use as fund for mass transit; Also, U.S. fuel prices very low; This is NOT a large increase in gas prices.
- #33 -Commercial only
- #43 -Modify to include requirement in letter for testing within 14 days
- #10 -application of presumptive RACT to smaller sources, between 10-25 tons per summer day in the ozone season
- #34 -land use measure: regulate impact fees, promote transit-oriented design, increase density near transit stations, promote mixed use development, promote infill and densification, concentrate activity centers, promote strong downtown centers, pedestrian facilities, interconnected street networks, and strategic parking facilities.

'ORK-IN-PROGRESS
ROPOSED PACKAGE OF CLEAN AIR STRATEGIES

Level 4 3 stakeholders voted for this

Option	Description	Source	VOC	NOx
39	Emission-Based Registration Fee	Mobile		
48	Enforce 55 MPH on PA Turnpike	Mobile	.18	.63
69	Park and Ride Const.	Mobile	.05	.06
74	Pre-1980 Scrappage	Mobile	.4	.3
113	Ban Open Burning on High Ozone Days			
117	Ban Recreational Boating on High Ozone Days			
TOTAL			.63 +	.99 +

ındividual Comments Associated With Level 4 Options

- Option 74 is especially important in the inner-city, where many residents have little choice but to drive older vehicles. We suggest that Sun Company vigorously pursue its gas cap replacement program in this area as a consciousness raising prelude to vehicle replacement.
- #39 -Apply to mass transit funding
-

General Comments:

- eliminste 130
- I/M - expand anti-tampering tests
- The selection of strategies recognizes the following:

  a) That a significant contribution to improved air quality is currently being made by regional corporations.

  b) That the responsibility for air quality is borne by the entire regional population. Consequently, mobile source strategies should be applied, albeit, reasonably to achieve necessary improvements.

  c) Certain strategies which directly involve the public in reasonable behavior modification practices, should be considered even though they do not yield significant VOCs or NOx reductions Public ownership of the process is essential to the improvement of regional air quality.

Comments: TARGETS AND ASSUMPTIONS FOR OZONE STAKEHOLDERS

- Reduce VOC by 25% and NOx by 50%, then ozone will fall by 20-30%
- Given existing measures and trends, VOC will fall by 35% to 2005 without any new control measures
- Given existing measures and trends, NOx will fall by 27% to 2005 without any new control measures
- Therefore, the region must reduce NOx another 23% or 105 tons per day to reach our target

Comments: OVERALL TRENDS IN EMISSIONS BY SOURCE (BIG PICTURE) 1990-1996

- Fuel Comb Electric Utility emissions are increasing
- Off-Highway, including airport, emissions are increasing
- Solvent emissions are decreasing overall, although non-industrial and graphic arts are increasing slightly
- Industrial fuel comb. category emissions are decreasing nearly 1/2
- Petroleum and refining NOx emissions are decreasing nearly 1/2
- Highway vehicle emissions are decreasing

Comments: LARGEST CONTRIBUTORS TO NOX EMISSIONS, RANKED IN ORDER, 1996

- Highway Vehicles (149.6 tpd)
- Off-Highway Vehicles (100.2 tpd)
- Fuel Comb, Electric Utility (80.8 tpd)
- Industrial Fuel Comb Category (45.2 tpd)
- Fuel Comb., Other (25.6 tpd)
- Solvents is the #1 VOC emitter (208 tpd)

Thus, an effective strategy to reach attainment of the ozone standard must be balanced among these sources - highway vehicles, off-highway vehicles and fuel combustion - recognizing these trends.

STRATEGY - WILL A NOx DECREASE OF 90 TPD GET US THERE?

Comments: POINT SOURCES

Clearly, point sources such as boilers, engines, RACT, turbines and heaters are the greatest single point of emissions. It is easy to "point" to these facilities to reduce emissions. It is easy to do the math to get emission reductions to 50 tpd (or more). For example #20, 22, 23, 35 = 50 tpd. The question is, can we afford it in this region? To maintain equity and competitiveness, point source reductions must be accompanied by a strong, broad OTC effort with all the utilities participating in the NOx MOU, at a minimum, particularly since NOx travels both south-north and west-east. Considerations should be given to the make-up of fuels used in utilities.

Comments: HIGHWAY AND OFF-HIGHWAY VEHICLES

These mobile sources are much more difficult to grasp, but are clearly a large part of the emissions equation. Considering the growth in vehicles and vehicle miles travelled, we cannot ignore these sources. Can we come up with emissions reductions of 40 tpd from this sector to reach attainment in a balanced way? Control measures #38, 39, 42ab, 51 81, 70, 60-73, 76, 79, 96, 109 get us in the right direction. In addition, we need to develop and articulate off-highway vehicle control measures. I'm not sure these exist on our list. To implement, these measures must be coordinated through outreach, education, pilot programs and incentives to be successful. Making some of the measures part of a cap and trade program may be the way.

Comments: OTHER SOURCES AND POLICY CONSIDERATIONS

Other Sources -

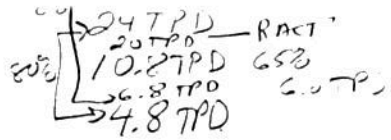
- Extend RFG to adjacent counties (#128), insist on its use in Pittsburgh, Carpooling pricing/timing incentives on the bridges in Philadelphia

Policy Considerations -

- Stakeholders support for the OTC NOx MOU (even broader than east coast) if we expect Philadelphia utilities to reduce emissions
- Stakeholder support for the I/M program
- Establish a Cap and Trade Program to create market incentives for emission reductions in the business community
- Commitment to education, outreach and pilot programs

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
Primary Control Measures Under Consideration								
1	Industrial Surface Coating	Add-on Controls or VOC Content Limits				0	N/A	
	Wood Furniture - Point	1997 SCAQMD Limits	0.3	0.1	25			
	Wood Furniture - Area	CTG Limits	2.9	1.0	1,800-5,900			
	Auto Body	none (more stringent levels were not identified)	0.4	0	0			
	Can Coating	CARB RACT/BARCT	9.0	2.2	4,000-5,000			
	Misc. Metal Parts	CARB RACT/BARCT	2.2	0.7	4,260			
	Plastic/Rubber/Glass Parts	SCAQMD Limits	0.3	0.2	1,110			
	Fabric/Paper Coating	SCAQMD Limits	23.1	5.5	4,000-5,000			
	Vinyl Coating	SCAQMD Limits	N/A	41%	4,000-5,000			
	Magnet Wire	none (more stringent levels were not identified)	N/A	0				
	Coil Coating	CARB RACT/BARCT	0.9	0.3	4,000-5,000			
	Metal Furniture/Appl.	CARB RACT/BARCT	7.5	1.5	4,000-5,000			
	Industrial Adhesives	SCAQMD Limits	0.9	0.8	800-6,800	0	N/A	
2	Surface Coating - Aerospace	Extend RACT, VOC Content Limit						
	Aerospace Ctg. - Point	none (assumed to be covered by MACT)		0	0			
	Aerospace Ctg. - Area	MACT/SCAQMD limits	0.5	0.3	4,000-5,000			
3	Autobody Refinishing	VOC Content Limits; CA Best Available Retrofit Control Technology				0	N/A	
	Auto Ref. - Area	SCAQMD Limits	10.8	3.8	3,700			
4	Surface Cleaning/Degreasing	CARB's Best Available Control Technology; Low-VOC Solvents				0	N/A	
	Surface Cleaning/Degreasing	SCAQMD Limits	14.8	5.9	Cost Saving $100			
5	Gasoline Service Stations: Underground Storage Tanks	Install Pressure Vacuum (PV) Valves on Vent Line	2.0	1.9	20-615	0	N/A	



SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
7	Petroleum Refinery Fugitive Emission Leaks	Inspection and Maintenance Program				0		
	Refinery Fugitives	More Stringent LDAR	5.3	1.0	680-1,150	0		
8	Rule Effectiveness Improvements	Increase Compliance with Regulations						
	Rule Effectiveness Improvements	Increased Compliance Activities		1.1 x X% (10% increase in the applicable effic.)	Unknown			
9	Web Offset Lithography	Carbon Adsorber				0		
	Web Offset Lithography	Beyond CTG Req. (e.g., carbon adsorp.)	0.7	~0	Unknown			
10	Graphic Arts	Low-VOC Inks and Cleaning Solvents				0		
	Graphic Arts	Extend RACT to Small Sources	2.4	1.5	3,500-4,800		N/A	
12	Pesticides	Reformulation to Lower VOC Content				0		
	Pesticides	CA FIP Rule	1.4	0.3	1,000			
13	Utility Boilers							
	Coal-Fired Boiler	LNB + Overfire Air	0.3			10.8		
	Coal-Fired Boiler	Selective Catalytic Reduction (SCR)	0.3			10.8	4.0	4,000
	Oil/Gas-Fired Boiler	LNB	0.8			23.2		
		SCR					9.0	4,400
14	Industrial Boilers		1.0			29.0		
	Coal-Fired	LNB	0.1			3.3	1.8	2,400
	Gas/Oil-Fired	LNB + Flue Gas Recirculation (FGR)				25.3	16.5	2,000-4,000
18	Glass Manufacturing	LNB	0			1.6		
		SCR					1.2	800-2,950
		Oxy-Firing					1.2	2,150-5,300

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
19	Gas Turbines: Natural Gas	LNB SCR + Steam Injection	0	0		0	0	3,580- 10,800
20	Gas Turbines: Oil	Water Injection NSCR + Water Injection	0.6			6.6	4.0	2,690- 8,100
21	Reciprocating IC Engines: Diesel/Oil	Ignition Timing Retard	0			0.1		
		SCR					0.1	580-4,810
22	Reciprocating IC Engines: Natural Gas	Air/Fuel (AF) Ratio Adjustment + ITR	0.5			11.3		
		SCR					10.1	580-4,810
		NSCR					10.1	180-310
23	Process Heaters: Natural Gas or Oil	LNB + FGR	0.1			10.4	6.8	1,500- 2,300
24	Iron and Steel Mills	LNB + FGR or LNB + SCR	0.4	0		1.0	0.8	800-2,960
		LNB + SCR					0.8	2,150- 5,300
25	Industrial, Commercial, and Institutional Combustion	RACT to Small Sources				25.2	12.6	
		RACT (LNB) to Smaller Sources: Coal Oil/Gas				0.6 24.6	0.3 12.3	1,600 760-1,400
26	Residential Water Heaters	LNB	0			0.9	0.1	Unknown
27	Residential Space Heaters	LNB				0	0	0
28	Medical Waste Incinerators	SNCR	0			0	0	12,000
29	Municipal Waste Incinerators	SNCR	0			0.1	<0.1	1,000- 4,000
31	Highway Vehicles and Stationary Sources	Ozone destroying paint - air handling systems, car radiators						
32	Asphalt Paving	Driveways - Non-HC Asphalt						
33	Consumer Solvents	Driveways - Sealer Low VOC						

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
34	Transportation	Land Use Planning - Promote Community Centers						
35	Light-, Medium-, and Heavy-Duty Diesel Vehicles and Trucks	California Reformulated Diesel Program	2.8	0	N/A	11.3	0.8	$3,700-7,700
36	Light-Duty Gasoline Vehicles and Trucks	More Remote Sensing	63.8	1.2	3,340	94.5	0.6	--
37	Light-Duty Gasoline Vehicles and Trucks	Scrappage Programs	63.8	0.1	4,800	94.5	0.1	--
38	Heavy-Duty Diesel Trucks	Vehicle Emission Inspections	2.8	<0.1		11.3	0	
39	Light-, Medium-, and Heavy-Duty ~~Diesel~~ Vehicles and Trucks	Emission-Based Registration Fees	66.6			105.8		
41	All Vehicles	Eliminate Excessive Curb Idling		Unknown			Unknown	
42	Urban Buses	Emissions Reduction Credit for Heavy-Duty Buses						
42a	Highway Vehicles 6,00 IOTRS buses	Emissions Reduction Credit for Heavy-Duty Buses: Clean Diesel for SEPTA-baseline	2.8	.47	0	11.3	2.19	0
42b	Highway Vehicles	Alternative Fuel Vehicles SEPTA: CNG for Frontier Division Busines	2.8	.01	457,800	11.3	0.23	26,700
43	All Vehicles	Smoking Vehicle Program	66.6	0.2	6,300	105.8	0	--
44	Highway Vehicles	Traffic Flow Improvements - Advanced Signal on 50 miles of Congested Arteries	66.6	0.15	21,620	105.8	0.16	
45	Highway Vehicles	Traffic Flow Improvements - CBD Signalization		0.35	125,048		0.27	
46	Highway Vehicles	Traffic Flow Improvements - Congestion/ Incident Management on Freeways		0.16	200,452		0.07	
47	Highway Vehicles	Traffic Flow Improvements - Ramp Metering		0.41	2,700		0.034	
48	Highway Vehicles	Traffic Flow Improvements - Enforce 55 mph on PA Turnpike		0.18	11,166		0.63	
51	Highway Vehicles	Transit Operations - Rail Headway Improvements - Planned Route 7 Changes	66.6	0.04	369,600	105.8	0.06	246,400
55	Highway Vehicles	Transit Operations - Improve Suburban Bus Service		0.07	45,356		0.10	

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
56	Highway Vehicles	Transit Operations - Transit First Principles		0.02	123,079		0.02	
57	Highway Vehicles	Transit Operations - Reuse of Surplus Light Rail and Trackless Trolleys		0.01	92,277		0.01	
58	Highway Vehicles	Transit Operations - Improve City Transit Division Service		0.09	42,637		0.09	
59	Highway Vehicles	Transit Operations - Philadelphia to Harrisburg Rail Service Improvements		0.01	619,774		0.03	
61	Highway Vehicles	Transportation Management Plans - Comprehensive Regional Ridesharing Program		0.30	10,262		0.33	
62	Highway Vehicles	Transportation Management Plans - Availability and Promotion of $25 Transitchek		0.12	128,691		-.14	
63	Highway Vehicles	Transportation Management Plans - Telecommuting		0.59	14,272		0.68	
64	Highway Vehicles	Transportation Management Plans - Compressed Work Weeks		0.21	11,226		0.27	
69	Highway Vehicles	Parking Management - Construct New Park and Ride Lots Along Highways		0.05	139,991		0.08	
70	Highway Vehicles	Parking Management - Expand Parking at Rail Stations (combine with #69) Planned Expansion	66.6	0.03	274,150	105.8	0.04	169,950
71	Highway Vehicles	Non-Motorized Programs and Facilities - Comprehensive Bicycle Improvements - Auto Work Trips		0.21	48,740		0.18	
72	Highway Vehicles	Non-Motorized Programs and Facilities - Comprehensive Bicycle Improvements - 14 Rail Station Trips		0.00	65,513		0.00	
73	Highway Vehicles	Non-Motorized Programs and Facilities - Comprehensive Bicycle Improvements - Non-work Trips		0.33	21,709		0.34	

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
74	Highway Vehicles	Emissions Reduction Programs - Removal of 50% of Pre-1980 Vehicles	66.6	0.4	57,354	105.8	0.3	
75	Highway Vehicles	Emissions Reduction Programs - Reduction in Cold Starts/Insulate Catalytic Converters		1.00	1,864		0.63	
76	Highway Vehicles	Emissions Reduction Programs - National LEV Program	66.6	11.5	1,860	105.8	13.5	
77	Highway Vehicles	Pricing Mechanisms - Feebate on New Car Purchase		0.28	4,393		0.17	
78	Highway Vehicles	Pricing Mechanisms - Gas Tax (84¢ per gallon)		5.20	(205,484)		8.70	
79	Highway Vehicles	Pricing Mechanisms - VMT Tax (4¢ per gallon)	66.6	5.20	(205,412)	105.8	8.70	
84	Highway Vehicles	Transit Operations - Grants to Non-profits to Promote Transit						
91	Highway Vehicles	High Occupancy Vehicle Lanes	66.6	0.6	Very High	105.8	1.3	Very High
96	Highway Vehicles	LPG - Pilot Programs at Service Stations						
	Highway Vehicles	CNG - Pilot Programs at Service Stations	66.6	2.41	174,100	105.8	1.42	294,300
100	Highway Vehicles	Area Source Business - Credits for Alternative Fuel Vehicles						
103	Marine Vessels	Control of Emissions (NO_x) from Ships and Ports	0	0	N/A	0	30%	$10,000
104	Commercial Marine Vessels	Emission fees ($10,000 per ton NO_x)	0	0%	N/A	0	30%	$10,000
105	Lawn and Garden	Emission Reduction Credits for Leaf Blowers; Electric Lawnmowers	30.1			1.3		
106	Lawn and Garden	Incentives for Electric Lawnmowers	30.1			1.3		
107	Nonroad	Nonroad Engine Emission Reduction Credit Programs						
109	Aircraft	Control of Emissions from Aircraft and Ground Support Equipment	9.4	3.7	Unknown	10.7	2.4	Unknown

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
111	≥175 horsepower Compression Ignition (Diesel) Engines: Construction Equipment: Scrapers, Bore/Drill Rigs, Excavators, Cranes, Off-Highway Trucks, Rubber Tired Dozers, and Off-Highway Tractors Logging Equipment: Fellers/Bunchers	California Phase II Exhaust Standards and EPA Statement of Principles with Engine Manufacturers	7.1	0	Unknown	43.3	0.8	Unknown
112	Recreational Vehicles		0.6			9.3		
	2-stroke engine category	Potential CARB Standards		0.3				
	4-stroke engine category	Potential CARB Standards		0				
113	Open Burning	Ban on High Ozone Days	0.23			0.1		
114	Open Burning	Year Round Ban	0.23			0.1		
116	All Lawn Care - Indivs. + Comm.	Ban on High Ozone Days	30.1			1.3		
118	Motor Vehicles	Voluntary "No-Drive" Measure						
119	All Sources (or a Subset)	Cap and Trade						
120	All Sources (or a Subset)	Open Market Trade						
122	Various	School-Based Public Awareness Ozone Action						
123	Various	Promote We Care Programs to Businesses						
124	Various	Outreach and Education - Environmentally Responsible Behavior - Green Light						
126	Various	Buying Emission Reduction Credits So They Cannot be Used (NO_x and VOC)			Market Price			Market Price
127	Various	Reduce ERCs by X% per Year While They Are in the Bank (NO_x and VOC)			Market Price			Market Price
129	Highway Vehicles	Ozone Action Days Transit Strategy						
130	Non-road Spark Ignition Engines <25 hp	No Non-road SI Engines Standard Because of NO_x Disbenefit		-(17-23)			+13	

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
Outside Five County Area Measures								
85	Highway Vehicles	Stage II - Entire Region (Beyond 5 County)	5.0	3.3	900	0	0	
128	Highway Vehicles and Non-road	Expand Reform Gas Area to Counties North and West of Five County Area	56.0	14.8	5,000	67.0	4.0	--
Demoted Measures								
6	Bulk Terminals	Vapor Recovery System						
11	Adhesives: Industrial	Reformulation and Product Substitution				0		
15	Adipic Acid Manufacturing Plants	Thermal Reduction	0			0		
16	Nitric Acid Manufacturing Plants	Extended Absorption	0			0		
		SCR						
		Nonselective Catalytic Reduction (NSCR)						
17	Cement Manufacturing	LNB SCR SNCR (Urea-based)	0			0		
30	Various	Small Business Tax Incentives						
40	Light-Duty Vehicles and Light-Duty Trucks	Eliminate Excessive Car Dealership Vehicle Starts						
49	Highway Vehicles	Transit Operations - Restore Regional Rail Service		0.01	857,915		0.02	
50	Highway Vehicles	Transit Operations - Extension of Route 66 Trackless Trolley		0.00	952,400		0.00	
52	Highway Vehicles	Transit Operations - Systemwide Fare Reductions of 10%	66.6	0.09	109,255	105.8	0.13	
53	Highway Vehicles	Transit Operations - Systemwide Fare Reductions of 20%		0.20	99,102		0.26	
54	Highway Vehicles	Transit Operations - Systemwide Fare Reductions of 50%		0.47	112,247		0.69	
60	Highway Vehicles	Transportation Management Plans - ETRP		1.80	(36,649)		2.20	

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
65	Highway Vehicles	Parking Management - Prohibit New Parking Facilities in CBD		Negligible Impact	Negligible Impact		Negligible Impact	
66	Highway Vehicles	Parking Management - Limit Parking Facilities at New Suburban Employment Sites		0.08	(33,728)		0.08	
67	Highway Vehicles	Parking Management - $3 Parking Surcharge		1.90	(435,912)		2.50	
68	Highway Vehicles	Parking Management - $3 Parking Tax in the CBD		0.47	(43,909)		0.73	
80	Highway Vehicles	Pricing Mechanisms - Double Tolls on PA Turnpike During Peak Periods		0.01	0		0.00	
81	Highway Vehicles	Emission Reduction Programs - Alternative Fuels - SEPTA	2.8	0.14 (0.61 with 42a)	229,500 (53,300 with 42a)	11.3	2.4 (4.6 with 42c)	13,550 (7,100 with 42a)
82	Highway Vehicles	Transit Operations - Reduce SEPTA Fares July-August						
83	Highway Vehicles	Pricing Mechanisms - HOV Parking Rate Incentive						
86	Highway Vehicles	Stage II - Statewide		60-70%			0	
87	Highway Vehicles	Ride Sharing						
88	Highway Vehicles	Increase Mass Transit Ridership - Parking Taxes, Market Incentives						
89	Highway Vehicles	Flat Tax on Vehicles - $200?						
90	Highway Vehicles	Build Two-Tier Highways						
92	Highway Vehicles	Traffic Flow @ 45 mph						
93	Highway Vehicles	Insulate Catalytic Converters						
94	Highway Vehicles	Promote Telecommuting						
95	Highway Vehicles	Credits for Compressed Work Week						
97	Highway Vehicles	Non-Employee Trip Reduction - Health Clubs						

SE Pennsylvania Ozone Stakeholders Group
Control Measures Summary (continued)

			VOC			NO_x		
Measure No.	Source Category	Control Measure	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton	2005 Emissions tpd	2005 Emission Reduction tpd	Cost Per Ton
98	Highway Vehicles	Buy New Engines for SEPTA - CNG, LPG						
	Highway Vehicles	Buy New Engines for SEPTA - LNG - Fleet Replacement Program	2.8	.14 (.61 with 42a)	337,000 (78,300 with 42a)	11.3	2.4 (4.60 with 42a)	19,900 (10,400 with 42a)
99	Highway Vehicles	Clean Fleet Replacement for Institutions, Large Businesses						
	Highway Vehicles	Clean Fleet Replacement for Institutions, Large Business - Light-Duty Vehicles	66.6	2.89	12,400	105.8	1.71	20,900
101	Highway Vehicles	Voluntary ETR						
102	Highway Vehicles	Alternative Fuel Vehicle - Build Fuel Stations						
108	Locomotives	Regional Railroad NO_x Emissions Reduction Measure	0.8	0%		8.2	2.9-3.5%	
110	Locomotive Engines	Potential Federal NO_x Emission Standards Potential CA NO_x Emission Standards	0.8			8.2	3.3% 6.6%	
115	Commercial Lawn Care	Ban on High Ozone Days						
117	Recreational Boating	Ban on High Ozone Days	10.9			1.1		
121	All Sources (or a Subset)	Across the Board Emission Reductions						
125	Various	Environmental Think Tank						